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THE CAREER OF RICHARD C. MACLAURIN:

I - The Early Years

ROY McLENNAN\*

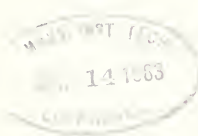
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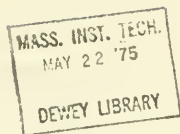
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I - The Early Years


ROY McLENNAN\*

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The research reported in this paper was supported by grants from the University of Sheffield Research Fund, and the Foundation for Management Education. The author would like to thank President Emeritus Julius A. Stratton and Archives Librarian Eleanor C. Bartlett of the Massachusetts Institute of Technology for their kind help in preparing this paper.

Visiting Scholar, M.I.T.  
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Sunday January 18, 1920 was a cold, blustery winter's day in Cambridge Massachusetts. Fine dry snow blew off the housetops, and filled the chilled air with whirling veils of frozen mist. In Charles River Road faculty members, students and graduates of the Massachusetts Institute of Technology stood silently in wide columns, bareheaded in the cold afternoon sunshine, a keen wind swirling over them. At 1.30 p.m. a casket was borne between the columns to the waiting hearse. R.C. Maclaurin, perhaps the greatest president of MIT, was leaving the Institute for the last time. On a trip to New York the week before he had caught a severe cold, which developed into pneumonia. The exhausting physical and psychological strain he had been under for many months had not given him the strength to fight off the infection. On Thursday January 15 he died. Only 49 years old he had, in a crowded career, accomplished much more than most men in a normal life span.

\* \* \* \* \*

Richard Cockburn Maclaurin was born in Lindean, Scotland, on June 5, 1870, a son of Robert and Martha Maclaurin.<sup>1</sup> Robert was the 50 year old minister of the United Presbyterian Church in a small parish near Edinburgh. A graduate of the University of Glasgow, where Lord Kelvin had been a classmate, he had had a broad education and was interested in philosophy, literature and science. The infant son's mother was the daughter of a doctor who practiced at Lerwick, in the Shetlands. By the early 1870s the Maclaurins had ten children, who ranged in age from infancy to maturity. Robert found the prospects of adequately supporting such a large family, in Scotland on a clergyman's stipend, most depressing. He also found himself increasingly out of sympathy with some of the tenets of his church, in particular its strict doctrine and code of behaviour. For these reasons, despite his age, he resolved to leave Scotland with his family, and make a start in a new land which had a reputation for a wonderful climate and free land. In early 1874 the Maclaurin family began to travel, by three instalments, to New Zealand. When he left Scotland young Dick was four years old.

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1. J.P.C.S., 'Richard Cockburn Maclaurin', in Dumas Malone (ed), Dictionary of American Biography, Vol. 12, Scribners', 1933.



The Maclaurins avoided the Scots, presbyterian-inspired settlement in Dunedin, a thousand miles to the south, and first established themselves at Pirongia, in the more free-thinking Auckland province. Pirongia was a minute village of a few small buildings, situated in the Waikato about ten miles west of the small village of Te Awamutu, and a hundred miles south of the major settlement of Auckland city. The Rev. Maclaurin became a missionary-preacher on an extended circuit in the sparsely populated countryside, a wearying task for a man in his fifties. With the establishment of a national primary school education system in 1877, however, he became a teacher, and took charge of the school at Te Awamutu. From this time life improved for him and his family. A few years later he took charge of the school at Hautapu, located between the small towns of Hamilton and Cambridge some miles to the north, where he continued teaching until his retirement. He also obtained a government land grant at Te Aroha, about forty miles to the east across the Waikato farm country. As a schoolmaster Dick's father was effective, and derived a good deal of satisfaction from his work. He also gave lectures in the halls of the small rural townships in the area. By this means he not only gave expression to his broad intellectual interests, but also earned fees to support his children's education.

Dick spent his early childhood in Waikato country districts of scattered farms and tiny settlements where everybody knew everybody else, everyone lived an outdoor life, and children rode to school on horseback. The Maclaurins were poor, but they lived in a thinly populated countryside where few were rich, and poverty was of relatively little significance. From the earliest Dick may have suffered from what in the 19th century was called 'a delicate constitution', a lack of 'robust health', the nature and causes of which eluded his early biographer.<sup>1</sup> It is possible that Dick had no greater handicap than slight physique and less than abundant energy. A modern investigator would ask questions about a possible connection between poverty and malnutrition, which might trace back to the family's Malthusian living conditions, especially in Scotland.

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1. Henry J. Pearson, Richard Cockburn Maclaurin, 1937, p.4. Pearson's source for this, as for most of the information he presents concerning Maclaurin's early life, was apparently Margaret Alice Maclaurin, Ab Origine Fidis: Faithful from the Beginning, The Story of the Lives of Richard Cockburn Maclaurin and Margaret Alice Young Maclaurin as Told to Margaret Emily Powell Mayer, n.p. (Boston?), n.d. (early 1930s?). This 225 page stencilled volume, consisting of narrative text and letters, constitutes the only substantial primary document concerning Maclaurin's early life. The only known copy is in the Archives of the Massachusetts Institute of Technology.



Dick's intellectual potentialities, which were early recognized by his father, were particularly shown by his unusual interest in books and aptitude for study, and by the ease and precision by which he carried out exercises in arithmetic. His father believed himself to be a descendent of Colin Maclaurin (1698-1746), who had in his time been a well known mathematician and physicist, and Professor of Mathematics at the University of Edinburgh.<sup>1</sup> Professor Maclaurin had been a friend of Sir Isaac Newton's, and a major interpreter of Newton's scientific works.<sup>2</sup> Colin Maclaurin had also been the son of a minister, and suffered from a 'delicate constitution'. Partly at least on the basis of supposed heredity Robert decided that Dick was to grow up to become a professor of mathematics. No other career possibilities for him were discussed, either at home or elsewhere, during his childhood.<sup>3</sup> In this way Dick's choice of career was pre-empted for him at a very early age by his father. Robert followed up his choice of career for Dick by strong encouragement to his son to study long and hard, especially in mathematics. Dick's youth was essentially spent at a study desk. During these long and often dreary hours he felt supported by the concern and attention of his warmhearted but undemonstrative mother.

There were, however, diversions from the main business of study. An incident from these early days illustrates Dick's youthful seriousness and directness. The climax of the day's events at Hautapu was the arrival of the mail coach from Auckland, driven by an American named Carter. The Maclaurins' schoolhouse acted as the post office for the scattered rural district. At eight years of age Dick pressed his claim for the job of overseeing the arrival and despatch of mail, which was accepted. The Post Office supplied twine, sealing wax and tapers for the purpose of sealing letters and packages. Dick felt that the materials provided were incomplete: there were no matches. On his own initiative he wrote to the Post-Master General, a cabinet minister located in the distant capital of Wellington, about the shortcoming. The outcome was the issue of matches to all Post Offices

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1. Pearson, *ibid* pp.5-6 notes that the connection between Robert and Colin Maclaurin does not show in the available records. These records do not, however, extend far enough back in time to prove the point either way. Two sets of first names had been used by Maclaurins' in the past, which seems to imply the existence of two separate families.

2. An Account of Sir Isaac Newton's Philosophical Discoveries, 1748.

3. Robert's decision may have been made as early as 1874.



throughout New Zealand. A less happy outcome of Dick's seriousness in the role of part-time postmaster was a life-long obsession he developed about catching trains and keeping appointments. The traumatic incidents which caused the obsession remain unknown.<sup>1</sup>

Other diversions from the long hours of study took physical, outdoor forms. Dick and his brothers looked after bees, shot rabbits, rode horses, played rough cricket, and went 'tramping' i.e. long country walks. When he was eleven Dick accompanied his father and older brothers to the family land at Te Aroha. While the older Maclaurins worked on the land, Dick carried out the chore of supplying them with food. This necessitated five mile tramps to the nearest township.

As Dick proceeded through primary school his father steadily prepared him academically for a secondary school education which, in those days, was not inevitable. When the time came he put the academic preparation to financial use as well: Dick won a Board of Education scholarship, in a field of 150 candidates, to attend Auckland Grammar School. At the age of 13 he left home to take up the scholarship and live in Auckland. Jim, Dick's older brother, already lived in Auckland, and worked there as a chemist. At Auckland Grammar School Dick was habitually top of his class, term after term, year in and year out. In his last two years he attained, in the opinion of his masters, the highest level of intellectual achievement of any boy in the school, and was consequently given the accolade of Dux twice. It was an unusual achievement. When he was 17 he topped the merit list of candidates from all over New Zealand in winning a university scholarship. He took up the scholarship at Auckland University College (AUC), the closest of the three tiny colleges in the country. AUC had been established about a decade earlier. It offered a limited range of courses, largely in the arts and sciences, leading to bachelors and masters degrees. The unclassified, general programme was the only kind of bachelors degree available. AUC was staffed by graduates of British universities, some of whom were Oxbridge educated.

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1. Pearson, op. cit. p.164 mentions the obsession and the connection with the mail coach, but not the precipitating incidents.





To accomodate those of his children studying and living in Auckland city, Dick's father Robert bought a house, Rocky Nook in George Street, which he paid for by the sale of his land at Te Aroha. Some time later Robert, now in his late sixties, retired from teaching, and went with his wife and the two youngest children to live in Auckland. In this way Dick lived under the direct influence of both his father and his mother while a student, a situation which supported the stern routine of long study hours of his earlier days. His numerous family provided a good deal of his social and cultural life: he was still very much a family member.

Dick sat his final examinations for the BA degree in the southern spring of 1890. In the middle of the examinations his father, now over seventy years of age, fell sick and died. Dick's immediate response to his death is unknown, but he completed his examinations and thus his degree.<sup>1</sup> The following year he studied for the MA degree, and sat another set of examinations at the end of the academic year. At university Dick was, as at school, habitually first in his class. Again as at school his efforts were rewarded by the highest distinction available, in this case a first class honours MA degree in mathematics.

By this time Dick had exhausted the opportunities for university education in mathematics in the small colleges of colonial New Zealand. On the grounds of ability, labour, achievement and potential a distinguished career in mathematics seemed a strong possibility for him. Such a career first required further education and confirmation of his abilities, to be sought in one of the leading universities in England, the colony's motherland and mentor. Professor W.S. Aldis, head of the department of mathematics at

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1. Being an unclassified award the quality of Dick's performance does not show in the degree's title. But if AUC's early records are still in existence it may be possible to check the point in terms of his performance in individual subjects. AUC became the University of Auckland some years ago.



AUC, was confident that Dick could do exceptionally well in England.<sup>1</sup> For his part Dick considered it his duty to complete his education in mathematics for the career his father had set his heart on. Aldis and Dick discussed study at Cambridge, but there were difficulties. Robert had planned to finance at least the first year of a three year stay in England, but he had died. Aldis was confident that Dick's rare ability would win him scholarships and prizes sufficient to support his studies in modest circumstances. He could conceivably even secure some competitive scholarship to help meet the first year's expenses. But funds to support the venture were needed before Dick could even leave New Zealand. Aldis and other friends discussed the problem, and prepared to help the penurious graduate as best they could. Then Dick's older brothers stepped in and declined the help offered. They showed their faith in Dick's ability by clubbing together to offer him a loan, which Dick accepted, confident that he could 'make good' and repay it.

\* \* \* \* \*

Dick sailed from Auckland in time to begin study at Cambridge University at the beginning of the academic year in October 1892. He was 22 years of age. Arriving in Cambridge shortly before term began, he immediately sat Open Exhibitions (scholarship examinations) at Emmanuel College and St Johns College. The two examinations were held in the morning and afternoon of the same day. He was successful in both attempts - a commendable effort for an unknown young graduate fresh from the colonies - and his immediate financial needs were thereby provided for. On account of its considerable reputation in mathematics Dick preferred to take up the Exhibition at St Johns. Dick registered for the mathematics Tripos degree programme, which consisted of two parts. Part I was taken by students at the end of three years, and brought the award of the BA degree. Part II was restricted to those who had performed well in Part I, and brought the award of the MA degree. In announcing the degree results of Part I Cambridge University followed the favourite Oxbridge academic tradition of publicly ranking successful candidates in order of merit, simplistically concluding that the list predicted

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1. Aldis was a distinguished graduate of Cambridge University, who had in his time been 'Senior Wrangler' i.e. top of the graduating class in mathematics, and a winner of the Smith's Prize awarded in that discipline.



each graduate's future achievements. Dick decided that his goal should be the Senior Wranglership, the title given to the candidate who headed the merit list. This was not an immodest aim: after all he already had two degrees and brilliant successes in mathematics under his belt.

The field of study for the degree included physics as well as mathematics. In mathematics the students' efforts were largely directed in academic, formalized directions, towards mastering the sorts of questions which might be asked in a stressful series of examinations, rather than towards mastery of mathematical problems of current interest. The curriculum adhered strictly to past practice: many topics considered in it had lost their meaning. Despite increasing criticism of this system of education, only half-hearted, unsuccessful attempts at reform had been made. The teaching of mathematics at Cambridge was at a low ebb.<sup>1</sup> Physics, on the other hand, was a different kettle of fish. It was taught by the brilliant men of the Cavendish Laboratory, who were heavily involved in some of the leading physics research of the time. Most students found the teaching of the Cavendish men stimulating, and developed strong interests and understanding of basic research.

For reasons of economic necessity and sense of obligation to his father, Dick put work first in the way he approached life at St Johns and Cambridge. One of his student friends described his work practices:

He was very regular in his working hours. He did not often attend lectures, but worked at his mathematics in his room from nine to one... after which he would have lunch in his room; then go for a walk with a friend, or two, in the country: returning at four o'clock, when there would be tea and biscuits partaken... in the room of one of the walking party or of some other friend. After tea Maclaurin would again work in his rooms at his mathematics ... till seven p.m. when he would go to have dinner in the Hall of his College. After dinner, a cup of coffee in the room of a friend (or his own room) and then work again in his room from nine to eleven. And so to bed.<sup>2</sup>

Dick did not enjoy his relatively solitary, study-centred existence: he felt his life at Cambridge was 'not much fun, in fact humdrum and

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1. This conclusion was reached by Pearson, op.cit. pp.15-16, who cites as evidence G.H. Hardy, 'The Case Against the Mathematical Tripos', (Presidential Address to the Mathematical Association), Mathematical Gazette, March, 1926.

2. Etienne de Villiers, a Cambridge law student from 1895. The quotation is from a letter quoted by Pearson, op.cit. pp. 30-31.



drab'. He regarded it as strictly necessary on economic grounds. In the first two years at St Johns he did not employ the services of a private tutor to coach him in his studies, and to provide him with practice in answering the sort of questions he would have to face in the Part 1 examinations. He did not mention this in his letters to his brothers in New Zealand. He also did without the room services English students usually took for granted, spent no money for 'coals', and made do without a bed maker.

One of the things that first struck Dick about St Johns and Cambridge was the visual, atmospheric effect of the place. He was moved by the setting and architecture of his college and the town. The statue of Sir Isaac Newton in the antechapel of Trinity College, holding a prism in his hands, was one of the first artistic objects to appeal to his imagination. Years later he remarked that 'one of the great formative influences' of his life derived from 'the silent effect of college halls and college groves and the atmosphere that surrounds those places'.<sup>1</sup>

Such social life as Dick experienced was in the company of other colonials like himself. He became the 'hub, centre and soul' of a small group of South Africans and New Zealanders. Only one Englishman belonged to the group. They were all men whose very presence at Cambridge was predicated on their abilities to draw scholarship support. By definition they were students of strong intellectual capabilities. They regarded themselves as 'working men', confined in their social, cultural and sporting activities to their colonial group by more than shortage of money. They were conscious of being aliens from the antipodes, the sons of new world pioneers. In the afternoons, when they paused in their work day, Dick and his colonial friends took some physical exercise. The standard activity was country walks. In the summer they went swimming in the Granta River (the River Cam above Cambridge), and played tennis. Four working men would rent a court for a month, and play every afternoon.

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1. Richard C. MacLaurin, 'Chicago Address', Technology Review, Vol. 12, 1914, p.171.





During these activities and at other times the colonials talked, argued and discussed as students do. The conversations ranged widely from current and social affairs to law, science, literature and history.

One of Dick's best friends was J.C. Smuts, a young Boer student from South Africa, who had already been in residence in Cambridge for a year when he arrived. Jan Smuts subsisted on a scholarship awarded by the University of Cape Town, and loans advanced on his life assurance policy. Jan was a law student, in the midst of a brilliant career at Cambridge. He had a broad interest in politics, literature and psychology. In addition to studying law he was also at work on a book on Walt Whitman. In their long talks Jan showed Dick the relevance of law in human affairs, the origin of a new interest which held strong consequences for the New Zealander.<sup>2</sup> Two other colonials who became close friends of Dick's a year or two later were Etienne de Villiers and Ernest Rutherford. Both came to Cambridge in the autumn of 1895. Etienne was, like Jan, both a Boer and a law student.<sup>3</sup> Dick enjoyed his company regularly. For his part Etienne felt that Dick had 'a wonderfully vivid personality' and was 'exceedingly well' liked by everyone who knew him'.

Dick first met Ernest Rutherford when the latter arrived from Canterbury University College in New Zealand in October 1895. A colonial working man from Nelson, in New Zealand's South Island, he had in 1894 been awarded an 1851 Exhibition Scholarship, which enabled him to study for two years in England or elsewhere. Ernest had secured the Scholarship because Dick's older brother Jim had relinquished it to get married and, instead of coming to England, continued studying at AUC in Auckland.<sup>4</sup> Dick called on Ernest,

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1. The book was eventually published under the title Holism and Evolution.

2. One outcome of the friendship was Jan's invitation to Dick, many years later, to come to South Africa to take charge of the Dominion's education system.

3. Later in his career Etienne became a Judge in the South African Supreme Court.

4. James S. MacLaurin received his Ph.D. from AUC in 1897. Subsequently he became government analyst in Wellington, the capital city of New Zealand.



and often visited me in my rooms outside College, dropping in just before ten in the evening, for by the regulations no one could be admitted after that hour, but could remain until twelve o'clock....

He often found me at work on some scientific calculations, and used to rag me gently for 'swotting' instead of passing my time in a more sociable manner. He left the impression that he was an airy butterfly who objected to serious work on principle and did as little as possible.<sup>1</sup>

Dick attempted to assume the appearance of the indolent, casual genius who, with little apparent effort, would turn in brilliant performances. Ernest noted that Dick loved discussion, and

was a pleasant and amusing companion, a raconteur of good stories and interested in many phases of life.<sup>2</sup>

He was probably the earliest to perceive a peculiar trait in Dick:

I was from the first impressed by his unusual reticence - I might almost say secrecy - about his own doings and prospects. He gave every man his ear but few his voice.<sup>3</sup>

This reticence was perhaps unconscious: it has been suggested that Dick was the sort of person who lacked all urge to talk about himself or his affairs.<sup>4</sup>

Dick practiced strict economy during Cambridge terms not only to balance his budget as a student, but also in order to save money for travel in the university vacations. With other colonial working men he went on walking tours of England, travelled to the Swiss Alps and climbed them, and visited London and Paris. On his own he made a trip to the Shetlands to visit his relations on his mother's side. Late in the summer of 1894 Dick and two Boer students journeyed, via Antwerp, to Strassburg to see Jan Smuts. By that time Jan had graduated from Cambridge, and was furthering his studies at the University of Strassburg. The three travellers spent some time at the Exhibition being held in Antwerp. Dick was most interested in Antwerp's statues, and spent two hours gazing at Rubens' Descent from the Cross. An intense enjoyment of visual experience had been awakened in him. When the colonials arrived in Strassburg Jan found rooms for them, and introduced them to his friends. For some weeks the group talked, dined and, being Cambridge men, rowed with races on the river Ill.

1. Letter from Lord Rutherford of Nelson in Margaret Alice Maclaurin, op.cit, pp. 6-7.
2. Margaret Alice Maclaurin, op.cit, p.7.
3. Margaret Alice Maclaurin, op.cit, p.7.
4. Ernest F. Nichols, 'Dr Maclaurin as a Colleague', Technology Review, Vol. 22, 1920, p.367.



The return to Cambridge followed, and for Dick the third year of his Part 1 studies, to culminate in the final degree examinations scheduled to take place in May 1895. In the winter of 1894-95 he finally resorted to making use of a private tutor. A month or two before the examinations he was incapacitated from study by toothache, so had 'half-a-dozen of the offenders hauled out'. As at Auckland something happened right in the middle of the concentrated period of examinations: one of his remaining teeth began aching vigorously. There was not very much he could do about it except bear it. There was no question of sitting certain papers at a later date: 'the Tripos, like death, can be experienced by a man only once'.<sup>1</sup>

When the results were published Dick found that T.J. Bromwich, a Boer student from Natal, had topped the merit list and become Senior Wrangler. He himself was only twelfth, a disastrous performance in his own eyes. Dick felt bitterly that his Part 1 ranking was an undeserved major setback, and experienced it as the first he had ever undergone in his academic career. He rationalized his perceived failure as a result of toothache. The causes were, however, hardly that shallow. Aside from any motivational considerations considered below the Part 1 examinations were, after all, the first occasion that Dick had entered into competition with students of the highest calibre, in a university with a world-wide reputation.

His ranking in Part 1 pigeonholed him, under the Oxbridge assumptions, to the career of an also-ran. Following a summer recovering his poise after the blow, Dick moved to vindicate himself in his own competitive eyes, and to break the Part 1 categorization of his ability, by entering for Part II of the Tripos in the Autumn. He chose the field of mathematical physics as his research topic, and attended lectures by the distinguished physicists in the Cavendish Laboratory. At the end of the academic year 1895-96 six graduates were awarded class 1 division 1 honours as a result of the Part II examinations, and Dick was among them. This time there was no merit list, but he had clearly moved up at least six places in the more restricted, elite

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1. Pearson, op.cit, pp.19-20.



field of Masters degree candidates.<sup>1</sup> This performance went a long way to restore Dick's self-concept, as well as his reputation among his friends and in St Johns. He wanted an even better performance, however, and found the means at hand in the form of the Smith's Prize Competition. The award of a Smith's Prize was considered the ultimate proof of the ability of a Cambridge mathematician, and Dick wanted that proof. To compete for a Prize Dick planned to transform his Part 11 research into an essay. What he needed was time and the environment in which he could write the essay.

An opportunity presented itself from an unexpected direction. He met James Ross, a Canadian millionaire. Ross's son John had not performed very well in his third year examination in engineering mathematics at McGill University in Montreal, and Ross sought a tutor for him. Dick was appointed to the post for the summer of 1896, and embarked for Canada. In his trunk he took the working papers of his essay for the Smith's Competition. In Montreal he quickly diagnosed John Ross's shortcomings in mathematics, and gained John's confidence and respect. The relationship became much more like that of friends than of tutor and student. Dick showed an ability to minimize the differences between himself and John. After all he had four degrees: John was struggling over his first. He also gained the confidence of the remarkable James Ross. Ross was one of the great Canadian railway builders, who had been responsible for the construction of the Canadian Pacific Railway through the Rocky and Selkirk mountains. A man of wide interests and activities, he introduced Dick to friends and associates of a very different kind from the Cambridge and Auckland academics and students he was accustomed to.

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1. The Tripos candidates who achieved class 1 division 1 results in Part 11 were:

<u>Name</u>	<u>Ranking in Part 1</u>
T.J. Bromwich	Senior Wrangler (First)
E.T. Whittaker	Second equal Wrangler
(name unknown)	Fourth Wrangler
A.E. Western	Seventh Wrangler
R.C. Maclaurin	Twelfth Wrangler

Source: Pearson, op.cit, pp.24-25.





In Montreal Dick underwent the new experience of living in an opulent mansion, which contained an art gallery holding works by Turner, Rembrandt, Franz Hals, Rubens, Reynolds, Corot and Millet. From daily contact with Ross's pictures Dick broadened his appreciation of visual art. His task to tutor John stretched out from the summer, through the autumn and winter until the spring of 1897. During this period he finished and submitted his essay for the Smith Competition, the title of which was 'On the Solutions of the Equation  $(\nabla^2 + k^2)\psi = 0$  in Elliptic Coordinates and their Physical Applications'.<sup>1</sup> He also acted as a coach to other students taking the mathematics part of the engineering examination at McGill. During the long, comfortable months he spent in Montreal he recuperated from the dreary, stern years of academic study, and lived a broader life in comfortable family circumstances. In April John sat and passed his final degree examination most successfully: Dick's pleasant engagement as tutor came to an end.

Dick prepared to travel back to Cambridge, and arranged a brief visit to the United States en route. It is not clear from direct evidence why he went to Cambridge, rather than to any of a number of other places. On the surface there seems to have been little necessity for him to return: the success or failure of his Smith Prize entry would no doubt be determined irrespective of his presence or absence. At 27 years of age, after an easy year, it was surely time he started to make his way in the occupational world, presumably by seeking a career in mathematics at some university. Such a line of action might not imply a further sojourn at his recent alma mater. From later events it seems reasonable to conclude that he went back to Cambridge for what was at best some vague and diffuse purpose, rather than in order to achieve specific objectives. There is no evidence that he had conceived any plan or strategy for his career by this time, despite the unpressured life in Montreal. After eight years at university Dick was becoming something of a perennial student, his growth arrested at the rubicon between formal education and a professional career. His return to Cambridge was probably motivated more by habit than anything else.

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1. Published in Transactions of the Cambridge Philosophical Society, Vol. 17, 1898.



In June his essay met its intended reward: the award of one of the Smith's Prizes. He shared the second prize, and further vindicated his ability as a mathematician in his own and Cambridge eyes.<sup>1</sup> The prize placed him among the top three mathematicians of his year; his prestige as a mathematician of high promise had risen to its zenith. Winning any of the Smith's prizes was a notable honour. A list of previous winners of the Smith's reads like a roll of honour of British science: Lord Kelvin, Sir John Herschel, Sir George Stokes, H.H. Turner, Sir George Darwin, Lord Rayleigh, Sir Joseph Larmor, J.J. Thomson and J.C. Maxwell.<sup>2</sup> Reviewing Dick's essay many years later J.A. Stratton, an American physicist, came to the conclusion that 'although writing as a mathematician, Maclaurin... placed the emphasis on the physical application of his results'.<sup>3</sup> There was a significant difference in emphasis between working on a mathematical problem for its own sake, and using mathematics as a tool to solve problems in physics. Dick's search for application, for what he called 'opportunities for usefulness', had become consciously integrated into his work in his disciplinary field. In a more pragmatic, career-support sense he had of course applied his intellectual abilities every year since he had been thirteen years old to finance his school and university education.

At Cambridge in the summer of 1897 Dick at last took stock of himself and his career. He realized he was 27 years old, more or less penniless, and admirably educated for a successful career as a mathematician. There were surely good prospects of securing a comfortable initial post in a familiar university environment. He felt he had discharged his obligation to his father's plan for him to become a

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1. The results of the 1897 Smith's Prize competition were as follows:

<u>Name</u>	<u>Smith's Prize Result</u>
T.J. Bromwich	Honourably Mentioned (i.e. Fifth)
E.T. Whittaker	First
(name unknown)	Great Merit (i.e. Fourth)
A.E. Western	Second Equal
R.C. Maclaurin	Second Equal

Source: Pearson, op.cit, pp.24-25.

2. Nichols, op. cit, p.365.

3. Quoted in Pearson, op.cit, p.25.



mathematician. But he felt unsure that he wanted to have a career in that field. These considerations showed perhaps the earliest independent thoughts he had about his career. The question he had to face, Dick realized, was what sort of career he should seek, and where he might pursue it. He reflected on his conversations with Jan Smuts, Etienne de Villiers and other colonials about the possibilities for him of a career in law. His interest in law could, he considered, lead him to the bar and a fruitful, personally satisfying career. He was aware, however, that a barrister of colonial origins, trying to make his career in London, would probably have to wait years for his first brief. After years of penury, should he choose a path leading to a hand-to-mouth existence of unknown duration?

As early as 1895, when still engaged in study for Part 1 of the Tripos, he had formed a view of the prospects of an academic career in Cambridge vis-a-vis one in the British colonies. In a letter to one of his brothers he had noted,

A fellowship is regarded as the mark of signal success in a university career - but, except in as far as it would be likely to help me to a congenial post in the colonies - I haven't the least ambition for such a thing. The life of an ordinary 'don' (as the 'fellows' are always called here) is about the last I should care to live. But, of course, if I think after the coming struggle [Part 1 of the Tripos] that I have any good ground for expecting to get a fellowship in reasonable time, it will be worthwhile sacrificing a little to get the thing as a stepping stone to something more to the purpose.<sup>1</sup>

In some sense supporting this position was the fact that all the members of his immediate family were in New Zealand, and he wanted to see them again. It had been five long years since he sailed from Auckland. And despite his many friends in England and feeling increasingly at home at St Johns, he owned to 'fits of loneliness' for his family and the New Zealand life style. His attitude towards Cambridge and England was ambivalent. From one point of view he realized that he would always be in Cambridge's debt for the opportunity opened to him: from another he was bitter about the negative effects of the Oxbridge examination system, and the regulations which had forced him to sit all the examin-

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1. Pearson, op.cit, pp.37-8.



ations of Part 1 at one attempt, despite his tooth. An upholder of democratic values, he was opposed to the existence of a privileged 'caste', and the barriers of social class which were a prominent feature of life at Cambridge and in England.

To consider the career issue concerning mathematics and law, Dick decided to take himself off to Strassburg for a few months. There he began to study philosophy in search of an answer,<sup>1</sup> a highly intellectualized, academic attempt at a solution. In September 1897 he was back in Cambridge, his mind apparently made up. He prepared to begin studying law to qualify for the bar. For the first time in his life he was embarking on the study of something he had chosen himself. To all appearances Dick was successfully overcoming a handicap: the pre-emption of his career choice by his father twenty years before. He was, of his own volition, opening up an independent - if unrealistic - career path.

At Cambridge that autumn he found financial support for his law studies in the award of the McMahon Law Studentship, the most highly valued of its kind in the University. He also became a member of Lincoln's Inn.<sup>2</sup> During the following academic year he studied law subjects and, in addition, undertook a piece of research in law which he could submit for yet another competition, this time the Yorke Prize. Given the McMahon Studentship he did not especially need the prize money. His entry showed his self-initiated commitment to the field of law, and his competitive and achievement needs. The object of his research was to trace the historical development of the title to realty in English law from the earliest times to the present day. Data for the study he drew from documentary sources. In the preface to the book he later published on the subject he remarked,

The law on the subject of title is a purely human structure whose foundations were laid centuries ago, and in its different parts we can see traces of the ideas and ways of life of the men of all the intervening ages.<sup>3</sup>

The essay marked an important stage in his development. It emphasized his contemporary prime interest as residing in human institutions and

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1. The origin of his interest in law seems to have been his friendship and regard for Jan Smuts.

2. One of the traditional legal societies which intending barristers usually joined.

3. R.C. MacLaurin, On the Nature and Evidence of Title to Realty, Cambridge University Press, 1901, p.vi.





human behaviour, rather than in mathematics or physical science. It showed his preference for the divergent phenomena of human behaviour, rather than the convergent phenomena of mathematics or physics. If his subject was nominally law, his treatment of it was historical, his interest at least partly what we should today describe as political, sociological, or even anthropological.

The essay was highly successful: in December 1898 Cambridge gave Dick the Yorke Prize of £100 for it, the first time the award had been made since 1893. And the essay earned the plaudits of a number of much more experienced students of law. Commenting on Maclaurin's achievements the Cambridge University Review remarked,

This Yorke Prize Essay is in many respects a notable work. Its author, Mr Maclaurin, has distinguished himself in a way that is, we believe, unique in the modern history of the University. He has gained the two most coveted University prizes, prizes that are awarded for original research in two completely distinct branches of learning - mathematics and law.

When Mr Maclaurin's Smith's Prize Essay was published, one of the most distinguished of British mathematicians wrote that it proved the author to be 'a skilled and profound mathematician quite of the first rank', and added that 'The same talent and industry, and capacity for seizing on the salient points of an investigation, will assure for Mr Maclaurin a high position in the mathematical world'. This essay on the Title to Realty suggests the repetition of the above opinion with the substitution of 'law' for 'mathematics'.<sup>1</sup>

The essay's success dramatized Dick's quite remarkable versatility. If he was as good as the best of his contemporaries at mathematics, he was apparently better than a different set of contemporaries at law. Such brilliance in two totally distinct disciplines might prove to be a resounding advantage in his career. It might also, however, create problems not experienced by those of more narrow competence, a need for choice between the two or a way of combining them, which could prove most difficult. But for the moment Dick had added a measure of knowledge concerning human institutions and human behaviour to his education in mathematics, physics and scientific method. His colonial friends were surprised at his success. Ernest Rutherford remarked,

Not one of us knew he was studying Law at all. At the time he was pretending to take an easy time, he must have been working with great energy and persistence at this new subject.<sup>2</sup>

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1. Quoted by Nichols, op. cit, p.365.

2. Letter from Lord Rutherford of Nelson in Margaret Alice Maclaurin, op.cit, p.8.



About the time of the Prize announcement the Fellows of St Johns successfully sponsored Dick's election to a Fellowship at the College.<sup>1</sup> This was a distinction bearing career and financial returns, which could constitute the best possible route to a distinguished academic career in Britain or the Empire. Such election was not offered to an unclubbable man. Dick's clouded career path now seemed clear enough: residence at St Johns for the foreseeable future; study of law and perhaps some mathematics; later, hopefully, a career as a barrister in London. But at this very moment when his way ahead at Cambridge was becoming more sharply focused, Dick decided to apply for the Chair of Mathematics at Victoria University College in Wellington, New Zealand, which had been advertised in the English newspapers.

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In 1897, the golden Jubilee of Queen Victoria's reign, the New Zealand government established a new university college at Wellington, to complement those established earlier at Auckland, Canterbury and Otago. The college was named Victoria University College (VUC) in honour of the Queen, and began its life on a shoe string, with only a government grant of £4,000 a year, no building and no building fund. VUC's Council, the governing body, decided to spend 70 per cent of its annual income to establish four foundation chairs, one each in classics, English, chemistry and mathematics. In the northern autumn of 1898 the chairs were advertised throughout Britain by the New Zealand Agent-General in London.

Dick's decision to apply for the Professorship of Mathematics was opportunistic, and flew in the face of his decision of a year before to follow a career in law. His commitment to a legal career was half-hearted: but there were problems involved in such a career, which he partly realized. The combined attractions of a post at home in New Zealand, close to his family, allied to the opportunity to achieve security status and income in the university world, were too strong for him to abide by his earlier decision. Where twelve months before he had made a step forward in working out a career appropriate to his interests and abilities, he now seemed to be taking two steps back. He showed his

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1. A new Fellow was elected by the existing Fellows on the basis of his university career, academic distinction, and being popular and well liked. A Fellow was a part owner of the College: the Fellows divided among themselves the surplus of the College's revenue after meeting expenses. Dick's share in the first year in which he held a Fellowship was £130.



ambivalence to his about-turn by working hard to provide the testimonials required by the method of application, while still resenting the time so absorbed. His efforts yielded fifteen testimonials in his favour, six of which were from past Smith's prizewinners. Chief among these was Sir Joseph Larmor, Lucasian Professor of Mathematics at Cambridge (Newton's old chair), and Secretary to the Royal Society. Lord Kelvin and Sir George Stokes, two grand old men of British science, also put in a word on his behalf. With his excellent qualifications, strong support from the distinguished and a New Zealand background, Dick's application could hardly fail. In January 1899 he was offered the Chair, and by the beginning of April he had travelled to Wellington to take it up.

With no buildings of its own, VUC was temporarily accommodated in the classrooms of Wellington Girls' College, and the laboratories of Wellington Technical College. VUC could use these facilities only after normal secondary school classes had finished for the day. University teaching began at 5 p.m. five days a week, supplemented by Saturday mornings. In these circumstances the four foundation professors gave their inaugural lectures to the College Council, many of the 115 students and the public at Wellington Girls' College on 10 April. To make the courses offered as broad and varied as possible the professors were asked to teach an additional subject, apart from their career fields. Any professor had to be something of a jack of all trades. From the first it had been intended to establish law at VUC. Dick took on the teaching of jurisprudence and constitutional history, and thus forged a fortuitous link to the field he had so recently forsaken.

All the professors were under 40 years of age, Dick at 28 being the youngest. As the only New Zealander among them, he was elected Chairman of the professorial board, a kind of informal, embryo version of the vice-chancellor's role more highly developed in better established British universities. One of his duties was to preside at the meetings of the Students' Association, organized within a fortnight of VUC opening its doors.<sup>1</sup> Everybody connected with the College were from the first keenly interested in obtaining suitable buildings for it. There were, however, predictable difficulties in agreeing on a site, and problems in obtaining funds from the government and private individuals.

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1. The Students' Association was a student union with elective office-holders.



By VUC's constitution these were issues for the Council and government to deal with, rather than the Chairman of the professorial board, and it all took time. The provisional arrangements made for VUC's accommodation at the beginning continued for years. Dick was well placed to play an informed observer's part in the discussions on sites and buildings, and 'had an object lesson in the internal strategy of such operations'.<sup>1</sup> Years later he was to draw on this experience of the classic university site-accommodation problem. Despite the physical handicap of the absence of its own bricks and mortar, VUC developed steadily as a centre of higher education and intellectual life.

Most of Dick's teaching of mathematics was elementary, and the number of more advanced students remained tiny. Law on the other hand flourished, and met a more definable need in the colony's capital. It was in that field that Dick found his prime opportunity as a teacher. He also gave invitation addresses to a wide variety of non-university audiences. As a service to the community VUC's professors gave free. popular lectures wherever they were wanted. Dick's topics for such offerings included astronomy, radium, and the new physics. Among other things he helped establish a debating society at the College, and with J.R. Brown, professor of classics and french, Sir John Tindlay and others formed a Browning Club. As well as reading poems, the Club became a forum for the discussion of social and philosophical problems.

In the early years after his return to New Zealand Dick lived at the Wellington Club. The address put him in a position to meet a mixed stream of businessmen, officials and other visitors to the capital. He enjoyed meeting and talking to such men. Other social satisfactions he obtained by joining the Masonic Lodge. Through his contact with the Technical College he became a friend of the principal, W.A. La Trobe, another Cambridge man recently returned home. His activities in law education brought him into contact with Sir Robert Stout, Chief Justice of New Zealand, and an ex-Prime Minister. The two became close friends. Through Sir Robert he met his partner Sir John Tindlay.

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1. Pearson, op.cit, p. 44.





As in the past Dick was physically active and mobile. He continued his practice of walking, rode a horse regularly for the first time in many years, and took up golf. A keen fisherman, through frequent fishing trips he became friendly with a Maori tribe in the Wellington area, and became interested in their culture. In the long vacation of 1899-1900 he went on an expedition via the inter-island ferry, railway and stage coach to Mt Cook, where he stayed at the old Hermitage. From this base he explored the Tasman Glacier and some of the other glaciers in the vicinity, climbed peaks, and went over the Ball Pass. On a number of other occasions he visited the Waimungu geyser in the thermal region. But despite his full and active professional, social and outdoor life he suffered a periodic longing for England. From time to time when in New Zealand he wanted to be in England, just as when in England he had wanted to be in New Zealand.

For about five years after his return home he produced very few published contributions to the professional literatures of either mathematics or law. He was presumably learning to be an effective teacher and a useful university administrator. During this period he wrote only one paper in mathematics,<sup>1</sup> and prepared his Title to Realty for publication in book form. By the terms of the Yorke Prize he was required to publish his essay anyway. But he did want to rewrite it substantially before sending it to the publishers. His intention was frustrated by the lack of availability of documents and facilities concerning the history of English law. The book was published in London in 1901, and was well received. Dick's meagre output for the years after 1899 shows that however creative he had been as a student, as a working professor assessed in 'publish or perish' terms, he had so far failed to live up to his high promise. He was undergoing a phase marked by a lack of impetus, a tapering off in his concentrated intellectual intensity, caused by some obstacle or block to his further growth as an individual. While he had achieved a workable compromise between mathematics and law, he was still not clear on the way ahead in the career sense. One of his friends at the Wellington Club counselled him to pursue a career in law, which should culminate in his appointment to the bench. But Dick was not sure he wanted such a career.

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1. 'The Influence of Stiffness on the Form of a Suspended Wire or Tape', Philosophical Magazine, July, 1903.



A break in his uncreative pattern came from an overdue direction. On a visit to Auckland he met a girl at a party. The next day he 'accidentally' encountered her at the art school at which she was studying. It must have been the clichéd 'love at first sight' for Dick. The cosmopolitan self-possession of the Cambridge-educated chairman of the professorial board at VUC quite deserted him: he left for Wellington without being certain of either her name or address. He was not even persistent, despite his aroused interest and history, and did not follow up the contact by any detective work. He showed in this incident that he was gauche and naive in his relations with women who interested him. Indeed he may well have been totally inexperienced. But as in his career, he was not unlucky in love either. Months later, following another visit to Auckland, he saw the girl again - this time purely by chance - on a boat bound from Auckland to Wellington. On this occasion he did manage to extract a few essential personal facts, and a good deal more. Her name was Alice Young. Her father had emigrated from Scotland many years before, and operated a business in Melbourne. The Young family had lived in Auckland since Alice was 14 years old. She was aboard the Wellington-bound boat on the first stage of a journey to England to continue her studies in art.

Dick had intended leaving the ship when it docked at New Plymouth before it reached Wellington, but changed his mind and talked to Alice more or less all the way to Wellington. While she waited there a few days to connect with the ship to take her to England, the two saw a great deal of each other, and romance flourished. It was January 1903, the middle of the long vacation at VUC: Dick had all the time in the world. In the 19th century manner Dick gave Alice his favourite books: Browning, Tennyson, and Palgrave's Golden Treasury. They arranged to write to one another. Just before Alice sailed Dick told her that in the long vacation at the end of the year he intended to visit England. An active correspondence across the water began within a week.

At the earliest possible moment in the academic year Dick boarded a ship and left New Zealand. His ostensible purpose was a combined study leave and holiday in the Old Country. As chairman of the professorial



board, with broad interests, he proposed studying education en route and in England to gain ideas for the development of education in New Zealand. His private, primary purpose was simple: he was going to see Alice and propose marriage. If Alice would not have him he had a tentative, apparently hair-brained alternative: he would try his luck as a barrister at the bar in London.<sup>1</sup> How he proposed tackling this is not clear. He set sail in the southern spring for San Francisco, and began collecting ideas on education in America by visiting Stanford University. Then he travelled right across the United States. While in Washington he had lunch with President Theodore Roosevelt, arranged presumably by Stout or some other politically connected friend in Wellington. In Boston he visited the Massachusetts Institute of Technology.

Dick arrived in England in December, and took a train to Newcastle, where Alice was spending Christmas with an Aunt. In short order he proposed to her, and, after some delay, Alice's father cabled his consent. The delay was caused, Dick remarked, by Mr Young's research in the police records. Alice refused to marry him at once and return with him to New Zealand. It was settled that the wedding would take place in New Zealand in December 1904, in some twelve months time. In the meantime, in order to spend some time together, they went on a tour via London, Paris and Florence to Naples, properly chaperoned by Alice's aunt. They spent three idyllic days in the galleries of Florence. From Naples Dick embarked on a ship and journeyed back to New Zealand.

During the long weeks of the voyage home he read and studied the information he had collected concerning American and British education. It was a mixed bag. As he remarked in a letter,

If you touch me anywhere I will shout out something either about moral training, cookery class, or Bible study in American schools, the education of a plumber, designs for jewelry, the value of the study of latin, the method of training teachers, the application of science to industry, or the management of a school for crippled boys and girls.

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1. Pearson, op.cit, p. 53.

2. Margaret Alcie MacLaurin, op.cit, p.75.



He believed

It is no easy matter to stir up enthusiasm for education anywhere - so few are alive to its real importance, being mostly engrossed with affairs of the moment and satisfied that what was good enough for a past generation will do now. Such a spirit would strangle progress anywhere and it must be fought and fought vigorously.<sup>1</sup>

The subsidiary purpose of his journey to the United States and England - to study education - seemed now to dominate his disciplinary interests in mathematics and law. His immediate objective in studying American education was to address a political meeting in Wellington in April. He also wanted to write a couple of newspaper articles. In a letter he explained,

I have no intention to enter into party politics, but I am very anxious that New Zealand should be 'up-to-date' with her educational system and this can be done only by arousing interest in the system amongst those who have votes and can use them to bring pressure on the political leaders - to whatever party they belong.<sup>2</sup>

Dick was showing an impetus towards the broad field of educational issues, and a political awareness more fitting to a governmental director of education in the New Zealand political system, or the leader of a university - a president in the U.S. system or a vice-chancellor in the British - than to a professor. By this time he may have conceived the idea of moving to a leadership role of a university or elsewhere. Any such thoughts received a fillip late in 1904 when Cambridge University conferred on him the honorary degree of LL.D. for his original contribution to the study of law in his Title to Realty. He felt 'a few more odd letter tacked to my name' might 'make an impression in certain quarters where appreciation may be of service'.<sup>3</sup> One wonders who and where the 'certain quarters' were.

Alice returned to New Zealand and the couple were married on 27 December 1904. They moved into their new house, on the brow of a windswept hill near Sir Robert Stout's in windy Wellington, commanding a magnificent view of the sea and hills. Dick declared that every seed he planted in the garden at the front of the house was later found sprouting in the garden behind it. Dick and Alice made many friends and settled down to a happy married life, punctuated by the unfortunate death at birth of their first child, a daughter, and periods in which neither of them were very well.

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1. Margaret Alice MacLaurin, op. cit, p.72-3.
  2. Margaret Alice MacLaurin, op. cit, p.74.
  3. Fearson, op.cit, p.49.





The block standing in the way of his personal growth cleared by marriage, in the period 1905 to 1907 Dick settled into a much more positive approach to research and publication. In rapid succession he wrote a series of seven essentially mathematical physics studies on light, which appeared in the Proceedings of the Royal Society.<sup>1</sup> He also began work on a book on light, and steadily pushed the first of three projected volumes through to completion. Apart from the obvious function of advancing his reputation in the field of mathematical physics, his object for the first volume was to fulfill a need for an authoritative treatment of light for the advanced student. This attempt to try to build his reputation by a return to mathematical research, rather than research in law, is on the face of it curious. It was not touched off by the needs and questions of his own students at VUC: he had few advanced students who could benefit from the book. Why, then, did he conceive it? He was, perhaps, taking up a perceived 'opportunity for usefulness'. From one point of view he had regressed to an earlier stage in his growth, when effort in mathematics had been functional for his development.

Whatever his psychological state, motives and goals were, there is little direct evidence. But behind it lay Dick and Alices' admitted restlessness with life in Wellington. Both they and their respective families were inveterate travellers, not especially adaptive to continuous residence in the one place. They both felt a nostalgic desire to return to England. It may well be that Dick felt, on purely pragmatic grounds, that concentrated endeavour in mathematics offered the quickest or most sure avenue to securing a distinguished post at an English university. It fitted his nostalgic mood that the research topic he had chosen had first been made famous at Cambridge, his old university, by the most celebrated Lucasian Professor of Mathematics, Sir Isaac Newton. As a further extension of nostalgia, his supposed

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1. 'Theory of the Reflection of Light near the Polarizing Angle', Series A, Vol. 76, 1905;  
'On Newton's Rings Formed by Metallic Reflection', Series A, Vol. 76, 1905;  
'On Metallic Reflection and the Influence of the Layer of Transition', Series A, Vol. 77, 1906;  
'A Numerical Examination of the Optical Properties of Thin Metallic Plates' Series A, Vol. 78, 1906;  
'On Light Elliptically Polarized by Reflexion, especially near the Polarizing Angle: a Comparison with Theory', Series A, Vol. 79, 1907;  
'On the Intensity of Light Reflected from Transparent Substances', Series A, Vol. 79, 1907;  
'On Optical Dispersion Formulae', Series A, Vol. 81, 1908.



ancestor Colin Maclaurin had made his contribution in explicating Newton's work.

But while Dick was hard at work on his book on light VUC moved decisively to develop university education in law at Wellington. Early in 1907 a school of law was formally organized at the College. The implications of the development were expanded opportunities for teaching, research and administration in that field. With organizational growth VUC was differentiating and formalizing its departments. Dick's long practice of dividing his teaching time between mathematics and law would now have a finite life. He was confronted by an ultimate choice between leading the work in law, the field he had nurtured, in the newly instituted role of Dean, and spending his time on teaching and administration in law, or returning to mathematics as an embracing commitment. The parting of the ways was on the horizon. Given his new found research activities, the outcome looked predictable: a return to mathematics. Instead Dick accepted the role of Dean and devoted himself almost entirely to law. He retained only a toehold in the department of mathematics, even that merely out of administrative convenience and courtesy: to tide the department over until someone else could be found to do his job. His break with the ordinary day-to-day work of mathematics was almost complete.

At the very moment at which he could be expected, as a university disciplinary specialist, to be concentrating his energies in one direction, he was 'doing the splits' between research in mathematics and teaching and administration in law. This is surely inexplicable in the usual disciplinary specialist terms. It is, however, explicable at a higher order of resolution. Maclaurin was not a specialist in a single subject. Rather, via his interests and capabilities in two fields, he was essentially a cosmopolitan. And whatever the strength of his need for power, he had also exhibited a drive to provide leadership in education. From this viewpoint Dick's acceptance of the Deanship was a culmination of his broad feeling for the powerful significance of education to society. His uncomfortable posture of research in one field and working in another as well would soon, however, become untenable. It was not a position he could maintain for long.

It was not long before a solution presented itself from a totally unexpected direction. In the southern winter of 1907, when Alice's second pregnancy neared termination, he received a letter from the



Department of Physics at Columbia University, New York, offering him the chair of mathematical physics in the department. The letter explained that the duties expected of the incumbent of the chair were to teach graduate students and carry out research. A few days later Alice gave birth to a healthy son, whom they named Rupert.

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Columbia University had for some time searched in Britain and Europe to find a professor of mathematical physics who met its high and exacting requirements. The chair had been established for advanced research in the field. It had previously been held by R.S. Woodward, an eminent theoretician, who had resigned to become president of the Carnegie Institution in Washington. Columbia's search for a successor had not succeeded, and the chair remained unoccupied for many months. In the course of some correspondence Sir Joseph Larmor, of Cambridge and the Royal Society, suggested Maclaurin's name to the Columbia professors, and recommended him very strongly.<sup>1</sup> Larmor expressed some doubt, though, whether he could be drawn to New York from far off New Zealand. The physics department had nevertheless written hopefully to Dick offering the appointment. They now awaited his response.

The offer called for Dick and Alice to resolve the question of what they wanted to do with their future. They discussed the post with friends. There were a number of related issues, involving a variety of cultural, geographical, psychological and career considerations. The Maclaurins' Wellington and New Zealand friends regarded taking up a post in a foreign country, outside the British Empire, as a rash and ill-advised move, an unknown risk to be avoided. They were told alarming stories about the rigors of New York's 'barbarous' climate. It was suggested to them that the cost of living in America's greatest city was quite scandalous. Did they, a couple habituated to the life style of small provincial towns, want to become inhabitants of one of the largest foreign cities in the world? To the Maclaurins one geographical fact was strongly in Columbia's favour: New York was only 3,000 miles, only a week at sea, away from 'Home' i.e. England. Acceptance of the post would place them in a handy position for regular visits to England. It could also constitute a stepping stone in seeking and securing a subsequent post in that country. From Dick's visit to

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1. Nichols, op.cit, p.365. It was Nichols, a professor of physics at Columbia, who had led the search for a replacement for Woodward, and corresponded with Larmor.



the United States he was confident about the good standing of the chair offered, and the scope for his talents in mathematical physics.

Dick was now 37 years of age, had been a professor at VUC for eight years, and Dean of the new law school for some months. The environment at the College and Wellington had been conducive to a broadening of his interests, activities and experience beyond the economically circumscribed options of a poor boy from New Zealand at Cambridge. It had offered him opportunities to develop as an seasoned academic, in the field of mathematics, and also in law. He had obtained initial, formative administrative experience of the development of a university from the nuclear stage to steady growth, and the problems affecting both: the site and building questions. He was now the acknowledged formal leader of the embryonic law school, and had almost completed the process of transferring all save his research activities towards law, away from applied mathematics. Was this the moment for a step into the unknown, a foreign excursion involving his return to mathematics? What about his aspirations for leadership in education? If his renewed vigour in mathematical research heralded a return to that field as his fundamental activity, and a desire to work at it in England, where is the evidence that he was actively seeking a post in the Old Country? Larmor's remarks to the Columbia physicists indicate that Dick had not contacted him - one of the most influential and well connected supporters he could have - about his intentions.

Dick found the offer of the chair intriguing and was also presumably flattered by it. His response to Columbia's letter indicated his interest in exploring the possibility. In the southern spring of 1907 Dick and Columbia exchanged cables, and it was agreed that he would come to New York in the New Year. Dick had succumbed to the alluring proximity of New York to London, to the same opportunism he had shown in 1898 in his attitude to the chair at VUC. Again he had waited for things to happen to him, rather than attempting to make them happen, to structure his future according to his aims. His orientation limited his choices. On 18 September 1907 he resigned from VUC, and his career at Wellington and in New Zealand drew to a close.

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By the terms of the arrangements made with Columbia University Dick was to start work in the department of physics about the beginning of February 1908, at the start of the second term in the academic year. The Maclaurins decided to visit Alice's parents Mr and Mrs Young, who were now living in Australia, after their departure from Wellington. Dick would then travel to the United States, while Alice and young Rupert would stay on with the Youngs, and travel with them to England in April. Dick would join them in England in the northern summer, after the academic year was over. Alice chose to be with her parents rather than her husband. Dick arrived in New York in late January, and was immediately befriended by Ernest F. Nichols of Columbia's physics department, the man who had pressed for his appointment. On his first Sunday in New York Dick had supper with the Nichols in their apartment, where he met George V. Wendell, head of the physics department at Stevens Institute of Technology, and Mrs Wendell. In the first few weeks of his stay in New York the Nichols introduced Dick to a variety of people he found interesting and stimulating, and his social life blossomed. Among his new acquaintances was Henry S. Pritchett, an astronomer who had a few years before resigned from the presidency of Massachusetts Institute of Technology. Dick and Pritchett talked about New Zealand, which the latter had visited many years before to observe the transit of Venus.

Within a few days of his arrival Dick set to work to begin Part II of his Theory of Light. But despite repeated efforts over many weeks, he made little progress. In a letter to Alice on February 18 he remarked:

I don't know how I'm going to get through this second volume of my book - I begin it without any relish - unless I can work up some enthusiasm later it is bound to be indifferent if not bad.

On March 6 he connected to her, 'Another day pretty well frittered away'. While he felt that his lack of progress was partly caused by not being 'settled down... with my family', another cause seemed closer to the truth. He found New York

a somewhat demoralizing city - there are so many interests and so much life that the attractions of pure science have an unreal ring

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1. Pearson, op. cit, p.68.



about them and one is occasionally depressed with the feeling that after all what is this struggling in matters scientific really worth.... just now I am oppressed with the idea that pure science has its limitations, that life has many other and more human problems to be attacked and solved that it seems foolish to be beating one's head against the hard wall of scientific difficulty.<sup>1</sup>

Dick was close to admitting the serious error he had made in becoming a mathematical physicist at Columbia.

For him, like Mr Micawber, however, something would always turn up. George Wendell and his wife were very much interested by the New Zealander they had just met. Wendell, an MIT graduate who also held a German Ph.D. had until some few months before, been a professor at MIT. Like many other supporters of the Institute he was on the lookout for a worthy candidate for MIT's vacant presidency, which had been under a caretaker arrangement since Fritchett had left three years before. MIT had too many problems to appeal to leading American scientists and technologists, and filling the post with a competent man was difficult. As the Wendells chatted about Dick it flashed through their minds that he was the man for the presidency. Wendell followed up his intuition by seeing Dick often, and talking a good deal about MIT. In early March he asked if he was prepared to be a candidate for the presidency.

Dick was faced by the immediate prospect of continuing toil in science, which he was finding unrewarding, or the possibility of movement to a radically different role, essentially involving leadership of a distinguished educational institution. The latter represented in extreme form the logical extension of his interests in university education, and his practice in academic leadership. On these grounds Dick believed himself fitted to the role of university leader. Far from being put off by the problems being experienced by MIT, he was on the contrary attracted by the very challenge of its difficulties. He was an achievement motivated optimist who believed that MIT's problems were soluble. It surely did not escape him that the role of president was compatible with long summer visits to England, and a salary which could

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1. Pearson, op. cit, p.68.



easily afford this luxury. If he was to become a candidate his hopes of living permanently in England would have to be put off until the outcome of his candidacy was known. For the more distant future emigration to England would depend on what happened in America. On the basis on these various considerations Dick was happy to agree to being considered a candidate. It remains to be seen what his attitude would have been if Alice had been with him in New York.

Wendell suggested to Dick that they visit Boston together, so that Dick could look the Institute over personally. A trip was soon set up with the help of Henry Pritchett. At MIT Maclaurin met Arthur A. Hoyer, the Acting President, and discussed the role of the president and the state of the Institute. He then returned to New York, finished his terms work, and embarked at the earliest opportunity for England, leaving his candidacy in the lap of the gods.

The high point of the summer for the reunited Maclaurins was a visit to Cambridge, where Maclaurin received a D.Sc. in recognition of his book on the Theory of Light, which had just been published. Shortly after this Dick and young Rupert contracted diphtheria, and Rupert nearly died. They spent the rest of the summer with Mr and Mrs Young, recuperating from the disease. The Youngs had finally settled in England. In the autumn the Maclaurins returned to New York and the academic year at Columbia. They soon found that George Wendell had spent his summer somewhat differently, maintaining liaison with Dr Hoyer, and promoting Maclaurin as a presidential candidate.

Dick soon found himself meeting, in an apparently casual way, executives and academics in one way or another connected with MIT. Visitors from the Institute 'began coming singly to Columbia, then by twos and threes'. One of them was Frederick P. Fish, a member of MIT's governing body, president of A.T. & T, and by education a lawyer. Maclaurin and Fish spent an evening together discussing Browning's poetry, rather than Institute matters. The 'casual' visitors compared notes on Dick's candidacy. They agreed that he was a dark horse, who would suffer some disadvantage from not being an American. He clearly had very limited knowledge of American institutions, and was not influentially connected in higher education, not a member of any useful 'old boy' network.

But the MIT people approved of Dick's high achievements at prestigious Cambridge University, and recognized the unusual broadening



value of his attainments in mathematics and law. They were impressed by his cultivated knowledge of literature and art. His diverse education, cosmopolitan experience and point of view, they felt, pointed to an unusual and distinctive versatility.<sup>1</sup> A decision on his candidacy steadily emerged: at the end of October he was offered the presidency and accepted the honour. It was less than nine months since his departure from New Zealand. Dick had, almost within a single year, redefined his central work interests. Where a year before he had committed himself to mathematical physics, he now chose management of an institution of higher education.

It remained for Maclaurin to see out the academic year at Columbia, and prepare himself for his future role. Apart from his regular duties teaching graduate students, during the winter of 1908-9 he gave ten public lectures on light at the American Museum of Natural History.<sup>2</sup> His object in giving the lectures was to expound the methods and findings of science in popular, non-technical terms to a wide public, and to demonstrate that 'modern science is an elaborate work of art'. The series showed his talent for making intellectually difficult material understandable to interested laymen, a talent he had developed in his popular lectures at VUC. It also marked, perhaps, the high point of his wife's influence on how he perceived his research endeavours.

Late in 1908 the elderly Mrs Emma Rogers sent him copies of the two volume work she had written about her husband, Life and Letters of William Barton Rogers, the man who had founded MIT in the 1860s.<sup>3</sup> Dick studied the volumes, and realized how close his ideas about university education were to Rogers'. With this book he began what became a careful and systematic study of the origins, history and development of the Institute, 'its goals, values and mission. He 'saturated himself with its spirit and tradition', and grasped the Institute's unique and significant mission in American higher education and society at large. He perceived

1. According to Pearson, op. cit, p.76, the corporation selection committee regarded him as being 'wholly without administrative experience'. This is most peculiar in the light of his record at VUC as ~~founder~~ <sup>founder</sup> ~~and~~ <sup>and</sup> ~~chairman~~ <sup>chairman</sup> of the professorial board, and dean of law. Unlike many candidates for many presidencies, no doubt, he had in addition also specifically studied many aspects of education and educational change, and the issues about influence implicated in securing change.

2. Published as Light, The Jesup Lectures, Columbia University Press, 1909

3. Emma Rogers (ed), Life and Letters of William Barton Rogers, 2 vols., Boston and New York, Houghton Mifflin, 1896.





its vast potential usefulness in both domains. When he later came to Boston for his inauguration as president he knew, via his systematic study of Rogers and detailed discussions with Wendell and Noyes, much more about MIT than MIT members and the public knew about him .<sup>1</sup> It was an advantage he did not throw away. In the meantime he drew upon these and his values in the addresses he gave to Institute faculty and alumni associations in Boston, Washington, New York and elsewhere, during the 1908-9 winter.

In these speeches he stressed that

The experience of most similar institutions in other parts of the world is that a bold policy, a courageous policy of trust in the future is the wise one. To advance rapidly, an institution must not be afraid of its own development. The Institute... has everything it could want in the shape of great traditions, distinguished and enthusiastic professors and alumni. <sup>2</sup>

Confidence in the quality of MIT as an organization and optimistic, future-oriented thinking, 'trust in the future', became two of his key operating assumptions. Such confidence and optimism were badly needed. For years MIT's problems had been known to the informed public. Even the very assumptions on which the Institute's education system had been built had been called into question. Maclaurin's message to Institute supporters was a call to confident action, not a call for further divisive debate and introspection.

MIT arranged that Dick should come to Boston to be inaugurated as president at ceremonies to be held in conjunction with a major alumni reunion. The day of his inauguration was to be June 9, 1909, four days after his thirty-ninth birthday. In the Spring of 1909 Alice and Dick decided that Alice should not accompany her husband in his first test on unfamiliar ground. She would rather travel with Rupert to England to see her mother, who was reputed to be seriously ill. Dick was to join his wife and child later in the summer, after his inauguration. Alice sailed in May, and Dick journeyed to Boston.

\* \* \* \* \*

In reviewing Dick Maclaurin's life until the time he became president of MIT two major themes appear to underlie the available data. One concerns his motivation, the other his sense of identity, related to the development of his career. From his earliest years he had developed a work-centred lifestyle,

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1. Samuel C. Prescott, When MIT was Boston Tech, MIT Press, 1954, p.247.  
2. From an early newspaper interview, quoted in Pearson, op. cit, p.79.



shaped by the combined influence of his parents: his task-centred father, and his supportive mother. The family had a proud history or pseudo-history of intellectual achievement, which was very early communicated to the young Dick. It was no accident that his father had been indoctrinated as a Scots presbyterian minister, a variant of Calvinism, the religion which preeminently emphasizes predestination through earthly works. Dick's career exhibits the protestant ethic, a strong relation between the investment of hard work on his part, and the pay-off in terms of satisfaction, financial success, reputation, status and esteem, to say nothing about eternal life. In more psychological terminology, from the time his father chose a career for him Dick was continually immersed in achieving standards of excellence in competitive educational situations. Between the age of 13 and 20 he took part, nearly always highly successfully, in dozens of zero sum or quasi-zero sum academic competitions. While in the early days there was a long term goal i.e. to become a professor of mathematics, there were short term goals along the way, at not more than annual intervals. At some point along the path standards of excellent performance became internalised and self-imposed, rather than imposed by his father, and he became emotionally involved in attaining the competitive goals. It is difficult to date the internalization.

Until he reached his late twenties being successful in examinations and scholarships gave Dick's life meaning. It seems likely that his affectation of intolerance as a student at Cambridge University was a defence mechanism to cloak his strong achievement motivation, about which he may have felt some sense of presbyterian guilt. The hypothesis that he experienced strong need for achievement helps explain his relatively poor performance in the Part I Tripos examination. In the Tripos Cambridge followed the English academic habit of not administering annual examinations. Such assessment, combining a merit list, was effectively left for three years from the time the student embarked on the degree programme. In these circumstances Dick could not obtain feedback on performance for many months, and hence his motivation and work suffered. At Wellington his achievement needs appear



to have been temporarily eclipsed. This might also be predicted from the nature of the motive: Dick had reached his original, major long term objective of becoming a professor of mathematics. It follows that a period of reorientation, in which he internalized new and revised needs and goals, should ensue. From the time he arrived in Wellington his need for affiliation seems to have become stronger. After marriage, however, his need for achievement regenerated, and resulted in his research and publications on light, and taking up the opportunities at Columbia and MIT.

In being a leader of the colonial 'working men' group at Cambridge MacLaurin showed his need for affiliation. ~~35~~ He did his utmost to restore the close relationship with his family by seeking the professorship at VUC. His activities in social clubs and dinner groups at Wellington illustrate the development of this motive off the job. Dick's need for power seems to have surfaced later than his other needs, and appears to have been weaker. But it had grown in strength and was conscious in his stated attitudes about influencing politicians concerning the importance of education about the time of his marriage. It was also expressed by taking up the deanship of law at VUC, and especially by seeking and accepting the presidency of MIT.

Dick's life was affected by an ongoing, unresolved problem of identity, of who he was and who he should become. Part of this problem concerned where he was and where he wanted to be, geographically speaking, of what his societal or national identity was, and how he conceived it. He was himself probably confused about his societal affiliation - if he was conscious about the issue at all. Little light can be shed on this issue by reviewing his legal status as a citizen, in this way to secure an indication of where he himself felt he stood. His British nationality did not differentiate him as being a New Zealander, a Scot, or even an Englishman. Dick was a member of part of an English-speaking generation who were broadly British, in the sense of being citizens of the British Empire, rather than members of a specific nation-state. At the time he lived it was probably impossible for anyone to self-consciously consider himself as possessing the national identity of a New Zealander: the country was a colony dependent economically, psychologically and sociologically on Britain, not a nation in the legal or psychological senses.



At Cambridge University he regarded himself as a colonial in an inclusive sense that lumped New Zealanders and South Africans together. But as one might expect of someone in the MacLaurin family, he also felt some romantic feelings for his Scottish heritage. After his years at Cambridge and especially from the time he married he had, like countless early and long term residents of New Zealand, a strong affinity for England, 'Home', 'The Old Country'. His anomie from a sense of specific national identity was probably intensified by his wife's predilection for living with her parents and being in England. A rough conclusion concerning his societal identity emerges from considering his social attitudes and style of behaviour. For a brilliant group of Cambridge University students to use the collective noun 'working man' was certainly neither Scottish nor English but semi-pure New Zealand. His aversion to 'caste', a privileged elite in a structured class system, could hardly have been learned from the privileged English elite he moved amongst at Cambridge. It was rather, of course, a typically New World, colonial attitude.

At a deeper level than where he was and where he wanted to be, Dick's identity problem concerned who he was and what he should become in terms of a professional career. From the first he had, as a kind of generalist, sought a career in universities, essentially specialized organizations, structured on a unitary discipline basis. Universities are organized, for the very large part, on the assumption that faculty will teach and research in mathematics or law or whatever, not mathematics and law, discipline X and discipline Y. The youth and undifferentiated nature of VJC in its early phase allowed MacLaurin to accommodate, for years, the basic misfit between his capabilities and the essential nature of the organization. When he came to Columbia, a much more mature and differentiated university, he found the misfit much more intensely uncomfortable. He effectively bypassed the whole problem, however, and effected a higher order resolution of it by coming to MIT as president, a role which optimally requires incumbents to be generalists.

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